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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/525,733

02/28/2005

Yoshitaka Nakajima

07241.0038

2552

22852 7590 10/14/2009
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EXAMINER

LAO, LUN S

ART UNIT

PAPER NUMBER

2614

MAIL DATE

DELIVERY MODE

10/14/2009

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/525,733	Applicant(s) NAKAJIMA ET AL.	
	Examiner LUN-SEE LAO	Art Unit 2614	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 05 August 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 17 and 19-35 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 17 and 19-35 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- ☒ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Introduction

1. This action is responses in the amendment filed on 08-05-2008. Claims 1-16 and 18 have been cancelled and claims 21-35 have been added. Claims 17 and 19-35 are pending.

Continued Examination Under 37 CFR 1.114

2. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 08-05-2009 has been entered.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4. Claims 17 and 19 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The claim 17 recited "A communication

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device for sampling sounds generated by a first person which are non-audible to a second person, comprising: a microphone; and a positioning structure coupled to the microphone, the positioning structure positioning the microphone on a surface of skin over a sternocleidomastoid muscle below a mastoid of the first person so as to detect vibrations non-audible to the second person, which are transmitted through flesh of the first person to the sternocleidomastoid muscle and conducted through the skin".

However, the specification does not clearly disclose what is the frequency range for soft tissue "non- audible sounds" and "audible sounds"; and how to define "non- audible sounds" and "audible sounds"; and what is the age of that second person will be, because different person's ages (such as, 10 years old and 70 years old) will have effect on their sensitivity to sound (frequency and volume level (db)) can be different). It is not supported in the specification nor in any claim originary and any figures.

Consider claim 19 it essentially similar to claim 17 and is rejected for the reason stated above apropos to claim 17.

Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6 Claims 17, 19-20, 23 and 35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Burnett (US PAT. 7,246,058) in view of "Selected Topics in Surface

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Electromyography for Use in the Occupational Setting: Expert Perspectives", U.S. Department of Health and Human Services, 1992, CDC (Publication No. 91-100) (hereafter as CDC).

Consider claim 17 as base on 112 first paragraph problem state above, Burnett teaches a communication device for sampling sounds generated by a first person which are non-audible to a second person, comprising:

a microphone (see fig.2 (10)); and

a positioning structure coupled to the microphone, the positioning structure positioning the microphone on a surface of skin over a muscle below a mastoid of the first person (reads on back of neck, and see col.5 line 15-25) so as to detect vibrations non-audible to the second person, which are transmitted through flesh of the first person to the skin and conducted through the skin (see fig.7 and col. 2 line 41-col. 4 line 13); but Burnett does not explicitly teach the positioning structure positioning the microphone on a surface of skin over a sternocleidomastoid muscle below a mastoid of the person. Burnett teaches the positioning structure positioning the sensor on back of the neck where speech production can be detected.

However, CDC teaches a positioning structure coupled to the microphone(see fig. 1-1(EMG)), the positioning structure positioning the microphone on a surface of skin over a sternocleidomastoid muscle below a mastoid of the first person so as to detect vibrations non-audible to the second person, which are transmitted through flesh of the first person to the sternocleidomastoid muscle and conducted through the skin (see figs 3-5 (B, C), figs 7-5, 7-6 and pages 12-14, page 24-26, pages 35-36).

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Since, Burnett does not limited what the positioning structure positioning the microphone on a surface of skin have to be, therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modified the invention of Burnett by implementing a particular arrangement (such as, the positioning structure positioning the microphone on a surface of skin over a sternocleidomastoid muscle below a mastoid of the first person) as claimed based on the designer's reference and needs for the purpose of acquiring the desired audio sound quality of the output signal to the listener in the acoustical environment.

Consider claim 35 Burnett teaches a signal processing apparatus (see figs. 1-7) that processes a signal sampled through the microphone according to claim 17(see above claim 17 rejection).

Consider claim 23 Burnett teaches a communication interface system comprising the microphone and a signal processing apparatus that processes a signal sampled through the microphone, wherein a result of processing by the signal processing apparatus is used for communications(see figs.1-7 and col. 2 line 41-col. 4 line 13(see above claim 17 rejection).

Consider claim 19 as base on 112 first paragraph problem state above, Burnett teaches a method for detecting sounds generated by a first person which are non-audible to a second person, comprising:

attaching a microphone on a surface of skin over a muscle below a mastoid of the first person(reads on back of neck, and see col.5 line 15-25 and fig.7)); and generating an electrical signal from the microphone corresponding to vibrations non-audible to the

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second person, which are generated by the first person and conducted through the skin(see figs.2, 7 and col. 2 line41-col. 4 line 13); but Burnett does not explicitly teach the positioning structure positioning the microphone on a surface of skin over a sternocleidomastoid muscle below a mastoid of the person. Burnett teaches the positioning structure positioning the sensor on back of the neck where speech production can be detected.

However, CDC teaches generating an electrical signal from the microphone (see fig. 1-1(EMG)) corresponding to vibrations non-audible to the second person, which are generated by the first person, the vibrations being transmitted through flesh of the first person to the sternocleidomastoid muscle and conducted through the skin(see figs 3-5 (B, C), figs 7-5, 7-6 and pages 12-14, page 24-26, pages 35-36).

Since, Burnett does not limited what the positioning structure positioning the microphone on a surface of skin have to be, therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modified the invention of Burnett by implementing a particular arrangement (such as, the positioning structure positioning the microphone on a surface of skin over a sternocleidomastoid muscle below a mastoid of the first person) as claimed based on the designer's reference and needs for the purpose of acquiring the desired audio sound quality of the output signal to the listener in the acoustical environment.

Consider claim 20 Burnett teaches the sounds include a murmur and a respiratory sound (see figs.2, 7 and col. 2 line41-col. 4 line 13 and col. 5 lines 15-25).

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7. Claims 21 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Burnett (US PAT. 7,246,058) as modified by "Selected Topics in Surface Electromyography for Use in the Occupational Setting: Expert Perspectives", U.S. Department of Health and Human Services, 1992 CDC (Publication No. 91-100) (here after CDC) as applied to claim 17 above, and further in view of Iwata (US PAT. 4,654,883).

Consider claims 21 and 22 Burnett as modified by CDC does not explicitly teach the microphone comprising a diaphragm installed on the surface of the skin and a sucker that sticks to the diaphragm; and the microphone which is integrated with a head-installed object such as glasses, a headphone, a supra-aural earphone, a cap, or a helmet which is installed on the human head of the first person.

However, Iwata teaches that the microphone comprises a diaphragm (see fig.3, (22)) installed on the surface of the skin and a sucker that sticks to the diaphragm (see col. 3 line 30-56) and the microphone (see fig.1, (17)) is integrated with a head-installed object such as glasses, a headphone, a supra-aural earphone, a cap, or a helmet which is installed on the human head of the first person(see fig.2 and see col. 3 line 30-56).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teaching of Iwata into Burnett and CDC to provide more accurate speech recognition.

8. Claims 24-34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Burnett (US PAT. 7,246,058) as modified by "Selected Topics in Surface

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Electromyography for Use in the Occupational Setting: Expert Perspectives", U.S.

Department of Health and Human Services, 1992 CDC (Publication No. 91-100)

(hereafter as CDC) as applied to claim 17 above, and further in of Holzrichter (US PAT. 5,729,694).

Consider claim 24 Burnett as modified by CDC does not explicitly teach the communication interface system, wherein the signal processing apparatus includes an analog digital converting section that quantizes a signal sampled through the microphone, a processor section that processes a result of the quantization by the analog digital converting section, and a transmission section that transmits a result of the processing by the processor section to an external apparatus.

However, Holzrichter teaches the communication interface system wherein the signal processing apparatus includes an analog digital converting section (see fig.5, 49 and col. 14 line 46-col. 15 line 67) that quantizes a signal sampled through the microphone (see fig. 20, (91-93, EM sensor)), a processor section (90) that processes a result of the quantization by the analog digital converting section(see fig.5, 49 and col. 14 line 46-col. 15 line 67), and a transmission section that transmits a result of the processing by the processor section to an external apparatus (96 and see col. 56 line 35-55).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teaching of Holzrichter into Burnett and CDC to provide different configurations and control systems for the quality of the data collection, and sound unit parsing.

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Consider claims 25-27, Holzrichter teaches the communication interface system wherein the signal processing apparatus includes an analog digital converting section (see fig.5, 49 and col. 14 line 46-col. 15 line 67) that quantizes a signal sampled through the microphone and a transmission section that transmits a result of the quantization by the analog digital converting section to an external apparatus (see fig. 20, (96) and see col. 56 line 35-55) and in that the external apparatus processes (such as cellular) the result of the quantization (see col. 16 lines 51-67); and the signal processing apparatus includes an analog digital converting section (see fig.5, 49 and col. 14 line 46-col. 15 line 67) that quantizes a signal sampled through the microphone (EM sensor), a processor section that processes a result of the quantization by the analog digital converting section, and a speech recognition section that executes a speech recognition process on a result of the processing by the processor section (see fig.8 and see col. 16 line 51-col. 17 line 18); and a transmission section that transmits a result of the speech recognition by the speech recognition section to an external apparatus(see fig.8 and see col. 16 line 51-col. 17 line 18).

Consider claim 28, Holzrichter teaches the communication interface system wherein an apparatus (see figs. 8 and 20) in a mobile telephone network executes a speech recognition process on the result of the processing by the processor section, the result being transmitted by the transmitting section(see col. 16 line 51-col. 17 line 18 and see col. 56 line 35-55).

Consider claims 29-31, Holzrichter teaches the signal processing executed by the signal processing apparatus is a modulating process in which the process section

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modulates the signal into sound audible to the second person(see figs 4-7 and see col. 15 line 29-col. 16 line 50); and the modulating process applies a fundamental frequency of the vocal cords to the sound to convert the sounds into sounds as produced by regular vibration of the vocal cords, the converted sounds being audible to the second person(see figs 4-7 and see col. 15 line 29-col. 16 line 50); and the modulating process converts a spectrum of the sound not involving the regular vibration of the vocal cords into a spectrum of sound as produced by the regular vibration of the vocal cords, the converted sounds being audible to the second person(see figs 4-7 and see col. 15 line 29-col. 16 line 50).

Consider claims 32-34, Holzrichter teaches that the communication interface system wherein the modulating process uses the spectrum of the sounds (see figs 14A-15B) speech recognition apparatus to recognize phonetic units such as syllables, semi-syllables, phonemes, two-juncture phonemes, and three-juncture phonemes and uses a speech synthesis technique to convert the recognized phonetic units into sounds as produced by regular vibration of the vocal cords, the sound being audible to the second person (see figs. 4-7 and see col. 20 line 16-67); and input gain (see fig.5, (47)) is controlled (45) in accordance with a magnitude of a dynamic range of a sound sampled through the microphone (EM sensor and see col. 15 line 29-67); and the speech recognition section appropriately executes speech recognition utilizing an acoustic model of at least one of the sounds non-audible to the second person, a whisper which is audible but is uttered without regularly vibrating the vocal cords, a sound uttered by regularly vibrating the vocal cords and including a low voice or a murmur (see figs 9a-

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10b), and various sounds such as a teeth gnashing sound and a tongue clucking sound (see col. 6 line 45-col. 7 line 64 and col. 9 line 16-col. 10 line 68) .

Consider claims 30-34, Burnett teaches that the communication interface system wherein the modulating process applies a fundamental frequency of the vocal cords to the sounds to convert the sounds into sound as produced by the regular vibration of the vocal cords, the converted sounds being audible to the second person(see figs. 1-10 and col. 2 line 41-col. 4 line 13); and the communication interface system, wherein the modulating process converts a spectrum of the sounds not involving the regular vibration of the vocal cords into a spectrum of sound as produced by the regular vibration of the vocal cords, the converted sounds being audible to the second person(see figs. 1-10 and col. 2 line 41-col. 4 line 13); and the communication interface system, wherein the modulating process uses the spectrum of the sounds and a speech recognition apparatus to recognize phonetic units such as syllables, semi-syllables, phonemes, two-juncture phonemes, and three-juncture phonemes and uses a speech synthesis technique to convert the recognized phonetic units into sounds as produced by regular vibration of the vocal cords, the sounds being audible to the second person(see figs. 1-10 and col. 2 line 41-col. 4 line 13); and the communication interface system wherein an input gain is controlled in accordance with a magnitude of a dynamic range of a sound sampled through the microphone(see figs. 1-10 and col. 2 line 41-col. 4 line 13); and the communication interface system, wherein the speech recognition section appropriately executes speech recognition utilizing an acoustic model of at least one of the sounds non-audible to the second person, a whisper which is audible but is

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uttered without regularly vibrating vocal cords, a sound uttered by regularly vibrating the vocal cords and including a low voice or a murmur, and various sounds such as a teeth gnashing sound and a tongue clucking sound(see figs. 1-10 and col. 2 line 41-col. 4 line 13).

Response to Arguments

9. Applicant's arguments with respect to claims 17 and 19-35 have been considered but are moot in view of the new ground(s) of rejection.

Applicant argued that rejection of Claims 17, and 19 under 35 U.S.C. §112, first paragraph. Applicant also pointed out that one reasonably skilled in the art, in view of at least the disclosure from page 9, line 9 to page 10, line 10 and page 22, lines 11-17 of the originally filed specification, would understand that the claimed "sounds generated by a first person which are non-audible to a second person" are non-audible vibrations caused by the movement of vocal cords of a first person as the first person moves his vocal cords to speak without generating an audible sound that a second person of any age sitting near the first person can hear(see the remarks page 8).

However, the examiner reads from page 9, line 9 to page 10, line 10 and page 22, lines 11-17 carefully, but the examiner can not find any support for "sounds generated by a first person which are non-audible to a second person" are non-audible vibrations caused by the movement of vocal cords of a first person as the first person moves his vocal cords to speak without generating an audible sound that a second person of any

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age sitting near the first person can hear. Therefore the 112 first paragraph rejection will be maintained.

Applicant further argued that the rejection of claims 17, 19, and 20 under 35 U.S.C. § 103(a) as being unpatentable Burnett in view of CDC. A prima facie case of obviousness has not been established (see the remarks page 10).

In response to applicant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, Burnett and CDC both teach the sensor to detect vibration of human muscle tissue and where the sensor located in, base on the designer's preference and needs acquiring the desired audio sound quality in the acoustical environment. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modified the invention of Burnett by implementing a particular arrangement (such as, the positioning structure positioning the microphone on a surface of skin over a sternocleidomastoid muscle below a mastoid of the first person) as claimed based on the designer's reference and needs for the purpose of acquiring the desired audio sound quality of the output signal to the listener in the acoustical environment.

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Applicant further argued that Burnett does not detect non-audible vibrations "transmitted through flesh of the first person to the sternocleidomastoid muscle"(see remarks page 11).

The examiner disagrees. First Burnet discloses a non-acoustic sensor to detect the vibration of human tissue associated with speech(see col. 3 line 50-63). Second Burnet discloses a microphone on a surface of skin over a muscle below a mastoid of the first person (reads on back of neck in broadly interpreted, and see col.5 line 15-25).

Therefore, the sensor taught by Burnett is placed in a back of neck to detect vibrations non-audible to the second person, which related to transmitting through flesh of the first person to the sternocleidomastoid muscle and conducted through the skin.

Applicant further argued that CDC dose not teach "detect vibrations non-audible to the second person, which are transmitted through flesh of the first person to the sternocleidomastoid muscle and conducted through the skin"(see the remarks page 12 3rd paragraph).

The examiner disagrees that CDC discloses a sensor efficiency of electrical activity as a physiological measure of the functional state of muscle tissue (page 79 left hand 3rd paragraph) and the measuring of CDC electrodes measure electrical potentials generated by muscle cells based on electromyography signals and detect vibrations non-audible to the second person, which are transmitted through flesh of the first person to the sternocleidomastoid muscle and conducted through the skin(see figs 3-5 (B, C), figs 7-5, 7-6 and pages 12-14, page 24-26, pages 35-36). The combination meets the claim 17.

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Conclusion

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Taenzer (US PAT. 6,631,197) is cited to show other related microphone and communication interface system.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lao, Lun-See whose telephone number is (571) 272-7501. The examiner can normally be reached on Monday-Friday from 8:00 to 5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vivian Chin, can be reached on (571) 272-7848.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Technology Center 2600 whose telephone number is (571) 272-2600.

Lao, Lun-See
/Lun-See Lao/
Examiner, Art Unit 2614
Patent Examiner
US Patent and Trademark Office
Knox
571-272-7501
Date 10-06-2009

/Vivian Chin/
Supervisory Patent Examiner, Art Unit 2614